

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

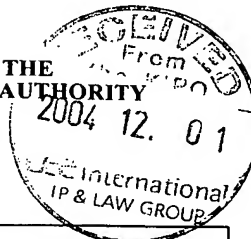
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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)



Date of mailing
(day/month/year) 23 NOVEMBER 2004 (23.11.2004)

Applicant's or agent's file reference

FPC04014-PCT

FOR FURTHER ACTION

See paragraph 2 below

International application No.

PCT/KR2004/001897

International filing date (day/month/year)

28 JULY 2004 (28.07.2004)

Priority date(day/month/year)

30 JULY 2003 (30.07.2003)

International Patent Classification (IPC) or both national classification and IPC

IPC7 H01M 4/48

Applicant

LG CHEM, LTD. et al

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/KR



Korean Intellectual Property Office
920 Dunsan-dong, Seo-gu, Daejeon 302-701,
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Authorized officer

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Telephone No. 82-42-481-5785



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/KR2004/001897

Box No. 1 Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/KR2004/001897

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|--------|-----|-----|
| Novelty (N) | Claims | 1-6 | YES |
| | Claims | | NO |
| Inventive step (IS) | Claims | 1-6 | YES |
| | Claims | | NO |
| Industrial applicability (IA) | Claims | 1-6 | YES |
| | Claims | | NO |

2. Citations and explanations :

The invention of claims 1-6 is that the compositions of the positive electrode includes the metal hydroxides with relating to the surface area, an conserved characteristics at a high temperature.

D1 : JP07-192721(28 July 1995)

D2 : JP12-40505 (February 2000)

D3 : JP12-173599 (23 June 2000)

1. D1 discloses a positive electrode that composes of lithium-transition metal composite oxide expressed by a formula: $\text{LiXNi}_{1-y}\text{MYOZ}$ (wherein $0 \leq Y \leq 1$, $1.8 < Z < 2.2$, and represents cobalt or two or more kinds of transition metals including cobalt) as a positive electrode active material.

2. D2 discloses a positive electrode body for a lithium secondary battery that has a positive electrode active material composition layer which is formed on one surface or both surfaces of a collector, and for which the content of lithium hydroxide is 0.4 wt.% or less, preferably, 0.1 wt.% or less.

3. D3 discloses a lithium containing composite oxide that is expressed by $\text{LiNi}_{(1-x)}\text{Co}_y\text{MzO}_2$ (where $0.1 \leq x \leq 0.3$, $0 \leq y \leq 0.3$, $0 \leq z \leq 0.3$, and $x=y+z$, and M is one or more of Al, Mn, Mg, Fe, V, Ca, Ti, and Cr).

The documents of D1, D2 and D3 do not disclose the positive electrode of a lithium ion battery having an improved conserved property at a high temperature.

None of the documents above, taken alone or in combination, reveals the invention defined in the claims 1-6. Therefore, the invention is novel, involves an inventive step and has industrial applicability